



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SUPPLEMENTAL SAFETY EVALUATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO DETAILED CONTROL ROOM DESIGN REVIEW
LOUISIANA POWER AND LIGHT COMPANY
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NO. 50-382

BACKGROUND

By letter dated October 1, 1984, Louisiana Light and Power Company (LP&L) submitted a Detailed Control Room Design Review (DCRDR) Program Plan (Reference 1) for the Waterford Steam Electric Station, Unit 3 (Waterford). Subsequently, the licensee submitted a Summary Report (SR) for the Waterford DCRDR dated April 30, 1985 (Reference 2) in order to satisfy the requirements of Supplement 1 to NUREG-0737.

The results of the review of the licensee's Program Plan and SR conducted by the staff and its consultants from Lawrence Livermore National Laboratory (LLNL) were provided in the Safety Evaluation (SE, Reference 3) dated October 30, 1985, and its attached Technical Evaluation Report (TER). The 1985 SE also reported on (1) the results of a pre-implementation audit of the Waterford DCRDR conducted by the staff and its consultants from LLNL on June 3-6, 1985, and (2) a review of the licensee's letter dated July 17, 1985 (Reference 4) which provided additional information on the licensee's DCRDR.

This Supplemental Safety Evaluation (SSE) is based on the following: (1) review of the Waterford DCRDR first Supplemental Summary Report (SSR1, Reference 5) by the staff and its consultants from LLNL reported in a letter dated August 28, 1986 (Reference 6); (2) staff review of the Waterford DCRDR second Supplemental Summary Report (SSR2) dated October 14, 1986 (Reference 7); (3) an onsite audit of the Waterford DCRDR by the staff on June 16, 1987; (4) staff review of the licensee's letter dated July 28, 1987 (Reference 8) that responded to the NRC's letter of July 2, 1987 (Reference 9), requesting additional information about the DCRDR at Waterford; and (5) staff review of the licensee's letter dated August 3, 1988 (Reference 10), responding to additional information requested during the conference call with the licensee on May 4, 1988.

EVALUATION

The staff evaluation of the Waterford DCRDR is provided below. The evaluation is consistent with Section 18.1, Revision 0 of NUREG-0800, "Standard Review Plan," (Reference 11). This evaluation is based on all information available to date and is presented in the same order as the DCRDR elements are identified in Supplement 1 to NUREG-0737 (Reference 12).

Establishment of a multidisciplinary review team

The staff concludes, based on the 1985 SE, that the licensee established a qualified multidisciplinary review team and has, therefore, satisfied this requirement of Supplement 1 to NUREG-0737.

Function and task analysis to identify control room operator tasks and information and control requirements during emergency operations

The staff requested additional information concerning the function and task analysis by letter dated July 2, 1987. By letter dated July 28, 1987, the licensee responded (1) that each of the 190 tasks identified during the task analysis had been evaluated to determine the match between task elements and appropriate and suitable control room instrumentation, (2) that the task analysis yielded a number of HEDs separately and in conjunction with other review processes, and (3) that the validity of the task analysis had been demonstrated because (i) each of the 190 tasks had been evaluated with findings consistent with the findings of other DCRDR processes, (ii) the task analysis process/verification paralleled the guidance of NUREG-0700 (Reference 13), and (iii) the task analysis followed the specifications in Military Standard-H-46855 (Reference 14).

Based on its review of results of the function and task analysis contained in the licensee's submittals (SSR1, SSR2, and the letter of July 28, 1987) and discussions during the onsite audit of June 16, 1987, the staff concludes that the licensee's function and task analysis is acceptable and satisfies this requirement of Supplement 1 to NUREG-0737.

Comparison of display and control requirements with a control room inventory

Based on the information provided in the licensee's submittals (SSR1, SSR2, and the letter of July 28, 1987) and discussions and control room observations during the onsite audit of June 16, 1987, the staff finds that the information, control, and display requirements compare with the controls and displays available. The staff, therefore, concludes that the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

Control room survey to identify deviations from accepted human factors principles

The staff finds, based on the 1985 SE, that the licensee has conducted an acceptable control room survey to identify deviations from accepted human factors principles and has satisfied this requirement of Supplement 1 to NUREG-0737.

Assessment of human engineering discrepancies to determine which are significant and should be corrected

The staff finds, based on the 1985 SE, that the licensee has assessed HEDs to determine which are significant and should be corrected and, therefore, concludes that the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

Selection of design improvements

In the SE, the staff concluded that the licensee's methodology (described in the SR) was acceptable for selecting control room design improvements that would correct safety significant HEDs. However, the staff requested additional information on certain HEDs to complete its evaluation. Subsequently, the licensee provided additional information by letters dated April 1, 1986, July 28, 1987, and August 3, 1988. The staff finds the explanations, commitments, and schedules as provided in these submittals are satisfactory and, therefore, concludes that the licensee has satisfied this requirement of Supplement 1 to NUREG-0737.

Verification that selected improvements will provide the necessary correction and will not introduce new human engineering discrepancies

The staff finds, based on the 1985 SE, that the licensee's proposed or implemented design modifications have been or will be verified to provide the necessary corrections without introducing additional HEDs. Therefore, the staff concludes that the LP&L verification program is acceptable and meets this requirement of Supplement 1 to NUREG-0737.

Coordination of control room improvements with changes from other Supplement 1 to NUREG-0737 initiatives

The staff finds, based on the 1985 SE, that the licensee has or will coordinate control room improvements with changes resulting from other improvement programs. Therefore, the staff concludes that the LP&L coordination program is acceptable and meets this requirement of Supplement 1 to NUREG-0737.

CONCLUSION

Based on a review of all the above mentioned documentation, discussions with the licensee and observations in the Waterford control room, the staff concludes that LP&L has conducted a DCRDR that satisfies all nine of the requirements of Supplement 1 to NUREG-0737.

REFERENCES

1. Program Plan Report for a Detailed Control Room Design Review for the Louisiana Power and Light Company, Waterford Steam Electric Station, Unit 3, October 1, 1984.
2. Waterford Steam Electric Station, Unit 3, Detailed Control Room Design Review Summary Report, April 30, 1985.
3. Letter from G. W. Knighton, (NRC) to R. S. Reddick (LP&L), "Detailed Control Room Design Review," October 30, 1985.
4. Letter from K. W. Cook (LP&L) to G. W. Knighton, "Response to Audit Confirmatory Item," July 17, 1985.

5. Waterford Steam Electric Station, Unit 3, "Detailed Control Room Design Review, Supplemental Summary Report," April 1, 1986.
6. Letter from G. L. Johnson (LLNL) to E. Tomlinson (NRC), "Review of the Waterford Detailed Control Room Design Review Supplemental Summary Report of April 1986," August 28, 1986.
7. Waterford Steam Electric Station, Unit 3, "Detailed Control Room Design Review Final Summary Report Supplement," October 14, 1986.
8. Letter from K. W. Cook (LP&L) to NRC, "Waterford SES, Unit 3, DCRDR, Supplemental Information," July 28, 1987.
9. Letter from J. H. Wilson (NRC) to J. G. Dewease (LP&L), "Request for Additional Information - Waterford 3 DCRDR," July 2, 1987.
10. Letter from R. F. Burski (LP&L) to NRC, "Detailed Control Room Design Review (DCRDR), Supplemental Information," August 3, 1988.
11. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 18.1, Appendix A, "Evaluation Criteria for Detailed Control Room Design Reviews," September 1984.
12. NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements - Requirements for Emergency Response Capability (Generic Letter No. 82-33)," December 17, 1982.
13. NUREG-0700, "Guidelines for Control Room Design Reviews," U.S. Nuclear Regulatory Commission, Parts 1 and 2, September 1981.
14. Military Standard-H46855, "Military Specification: Human Engineering Requirements for Military Systems Equipment, and Facilities," January 1979.

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